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A new species of *Trachelipus* Budde-Lund, 1908 (Isopoda: Oniscidea: Trachelipodidae) from the Utrish Nature Reserve, northwestern Caucasus

Новый вид рода *Trachelipus* Budde-Lund, 1908 (Isopoda: Oniscidea: Trachelipodidae) из заповедника Утриш, северо-западный Кавказ

K.B. Gongalsky
К.Б. Гонгальский

A.N. Severtsov Institute of Ecology and Evolution of Russian Academy of Sciences, Moscow 119071, Russia. E-mail: gongalsky@gmail.com
Институт проблем экологии и эволюции им. А.Н. Северцова РАН, Москва, 119071, Россия.

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КЛЮЧЕВЫЕ СЛОВА: Isopoda, Oniscidea, *Trachelipus*, новый вид, мокрица, Кавказ.

ABSTRACT. A new species of woodlice, *Trachelipus utrishensis* sp.n. (Trachelipodidae), is described from the Utrish State Nature Reserve located on the Black Sea coast of the northwestern Caucasus, east of Novorossiysk. Diagnostic features of the new species as well as affinities within the genus *Trachelipus* Budde-Lund, 1908 are provided and discussed.

РЕЗЮМЕ. Описан новый вид мокриц, *Trachelipus utrishensis* sp.n. (Trachelipodidae) из государственного природного заповедника Утриш, расположенного на берегу Черного моря на северо-западном Кавказе, к востоку от Новороссийска. Представлены и обсуждены диагностические особенности нового вида, а также сродство в пределах рода *Trachelipus* Budde-Lund, 1908.

Introduction

The genus *Trachelipus* is very diverse encompassing more than 50 species [Schmalfuss, 2003], and rather variable [Tomescu et al., 2015] which makes species identification problematic. However, the genus in central and southern Europe was thoroughly revised by Ch. Schmidt [1997]. At the same time, a vast diversity of this genus can be found in regional faunas like the Caucasus [Kuznetsova, Gongalsky, 2012]. Schmalfuss and Khisametdinova [2015] presented an overview of the *Trachelipus* species inhabiting the eastern Black Sea coast of the Caucasus region, clarified the distribution of four species and highlighted the areas of potential occurrence of undescribed species.

One of these spots is an area recently turned into the Utrish Nature Reserve on the Black Sea coast, on the Abrau Peninsula, east of Novorossiysk. The area attracts attention due to unique Mediterranean ecosystems on the Black Sea coast of Russia, and its very low accessibility and thus the low level of disturbance. The reserve includes both Mediterranean and low-mountain (up to 500 m a.s.l.) ecosystems. In the frames of study of soil fauna, we started investigating the fauna and population of woodlice of this area and discovered some species new to Russia [Gongalsky, Kuznetsova, 2011; Gongalsky, 2015]. Among the species listed in this area there were two *Trachelipus* species: *T. razzautii* (Arcangeli, 1913) and another species that's systematic position was doubtful. Although inhabiting the same area, these two species are clearly separated by the preferred environmental variables. A thorough analysis of both the morphology and ecology of this species and the literature brought us to the conclusion that there is an undescribed species who's description is provided below.

Material and Methods

The specimens were collected by hand and fixed in 96% ethanol. Terminology used in the species description is mainly based on Vandel [1960].

The investigation conducted by the author and his colleagues in the ecosystems of the Abrau Peninsula in 2004-2016 yielded a rich collection of woodlice specimens of this genus. One of two collected species is described herewith as a new species. Processing and dissections were done by using a Leica MZ8 binocular microscope. Micro preparations of diagnostic body appendages were done in euparal (Carl Roth GmbH). Line drawings were executed with the help of an Olympus BX41 microscope supplied with an Olympus U-DA camera lucida. The material is deposited in the collection of the Zoological Museum of Moscow University, Russia (ZMMU), and partly retained in the private collection of the author (A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia), as indicated below.



Fig. 1. Dorsal view of female paratype *Trachelipus utrishensis* sp.n., from the Abrau Peninsula, northwestern Caucasus.

Рис. 1. Габитус сверху паратипа *Trachelipus utrishensis* sp.n., самка, с полуострова Абрау, северо-западный Кавказ.

Taxonomy

Class Malacostraca Latreille, 1802
Order Isopoda Latreille, 1817
Family Trachelipodidae Strouhal, 1953
Genus *Trachelipus* Budde-Lund, 1908

Trachelipus utrishensis Gongalsky **sp.n.**
Figs. 1–5.

MATERIAL. Holotype: ♂ (ZMMU), Russia, Krasnodar Region, Utrish, 1 Topolnaya Valley, broadleave forest, VI.2008, K. Gongalsky leg.

Paratypes: 2 ♂♂, 2 ♀♀ (ZMMU), 3 ♂♂, 4 ♀♀ (private collection of K. Gongalsky), Russia, Krasnodar Region, Utrish, 2 Topolnaya Valley, broadleave forest, VI.2006, K. Gongalsky leg.; 2 ♀♀ (ZMMU), Russia, Krasnodar Region, Utrish, 1 Topolnaya Valley, broadleave forest, 17.VII.2016, A. Gorbunova leg.

DIAGNOSIS. A species of *Trachelipus* characterized by the antennal flagellum with the articles of equal length; male exopod of pleopod 1 with the outer margin not convex in the proximal part; and male carpus of pereopod 7 with a prominent dorsal crest, widest in the middle of the carpus.

DESCRIPTION. *Somatic characters.* Maximum body length: male 10.5 mm; female 14.0 mm. Holotype body length 10.2 mm. The body colour is dark grey-brown. At the base of the coxal plates of the pereonal segments 2–7 there are white or yellow spots, longer on the segments 5–7. Pereonal segments 2–7 and pleonal segments 1–3 with middle elongated white spots forming almost a line along the body. The posterior tips of the coxal plates are yellow-reddish. Laterally from the median zone of the pereonal tergites there are two fine yellowish pattern stripes (Fig. 1). Dorsal surface of cephalon and tergites is tuberculated. Tubercles are fewer and smaller on the coxal plates. The dorsal surface is covered with Y-shaped scale-setae (Fig. 2A). The glandular pore fields are round-shaped and distanced from the lateral margin (Fig. 2B). The body relatively elongated; pleon forms continuous margin with pereon (Fig. 1). Noduli laterales are located far from the lateral margins on the pereonite 1 and close to the lateral margins on the pereonites 2 to 7 (Fig. 2B). The cephalic lobes are well developed. The external sides of the lateral lobes are inclined to the exterior. The median lobe has its distal edge semicircular (Fig. 2C). The posterior margin of the coxal plates on the segments 1–3 are sinuous, and on the segments 4–7 are curved (Fig. 1). Telson is with distal part narrow with rounded apex (Fig. 2D).

Appendages. Antennula with three articles (Fig. 2E); first article wide and long; second article three times shorter than first; third almost as long as first and narrow, bearing a tuft of aesthetascs at apex. Antenna reaching rear margin of pereonite 3; flagellum with 2 articles, of equal length (Fig. 2F).

Left mandible (Fig. 3*A*) with pars incisiva with 2 teeth; basal to the lacinia is a hairy lobe with 2 penicils; molar penicil consisting of 12–14 plumose setae. Right mandible (Fig. 3B) with pars incisiva with 3 teeth; hairy lobe with 1 penicil; molar penicil as in the left. Maxillula (Fig. 3C): medial corner of inner endite with 2 strong penicils. Apical edge of outer endite bearing 10 teeth that are divided into two groups, the 6 medial teeth are more slender, with 4–5 cleft tips and 4 lateral spines are stouter with simple tips. Maxilla with bilobate edge, the medial half of of the apical edge of the inner lobe with a dense brush of short hairs (Fig. 3D). Maxilliped with outer corner of endite with 2 acute tips and large spine near the inner corner (Fig. 3E). Basal article of palp with 2 large spines. Tip of the distal article of palp consisting of a brush of spines. Pleopods with all exopods bearing uncovered lungs. Uropods (Fig. 2D) with exopods flattened and oval shaped, with 3 relatively large spines on apex.

Male: Pereopods (Fig. 4A–4C). Pereopod 7 ischium with ventral margin slightly concave. The carpus has a prominent dorsal crest, widest in the middle (Fig. 4*C*). Genital papilla of a shape typical of the genus. Exopod of pleopod 1 (Fig. 5A) with a long and narrow distal part bent outwards; outer margin straight, not convex in the proximal part. Endopod of pleopod 1 with dorsal furrow and with a row of spines which become longer the closer to the tip they are (Fig. 5B). Pleopod 2: exopod is triangular with concave outer margin (Fig. 5C); endopod is much longer than exopod, narrow, with parallel sides (Fig. 5D). Pleopod 3–5: exopods (Fig. 3E–G) are triangular, slightly decreasing in size from 3 to 5.

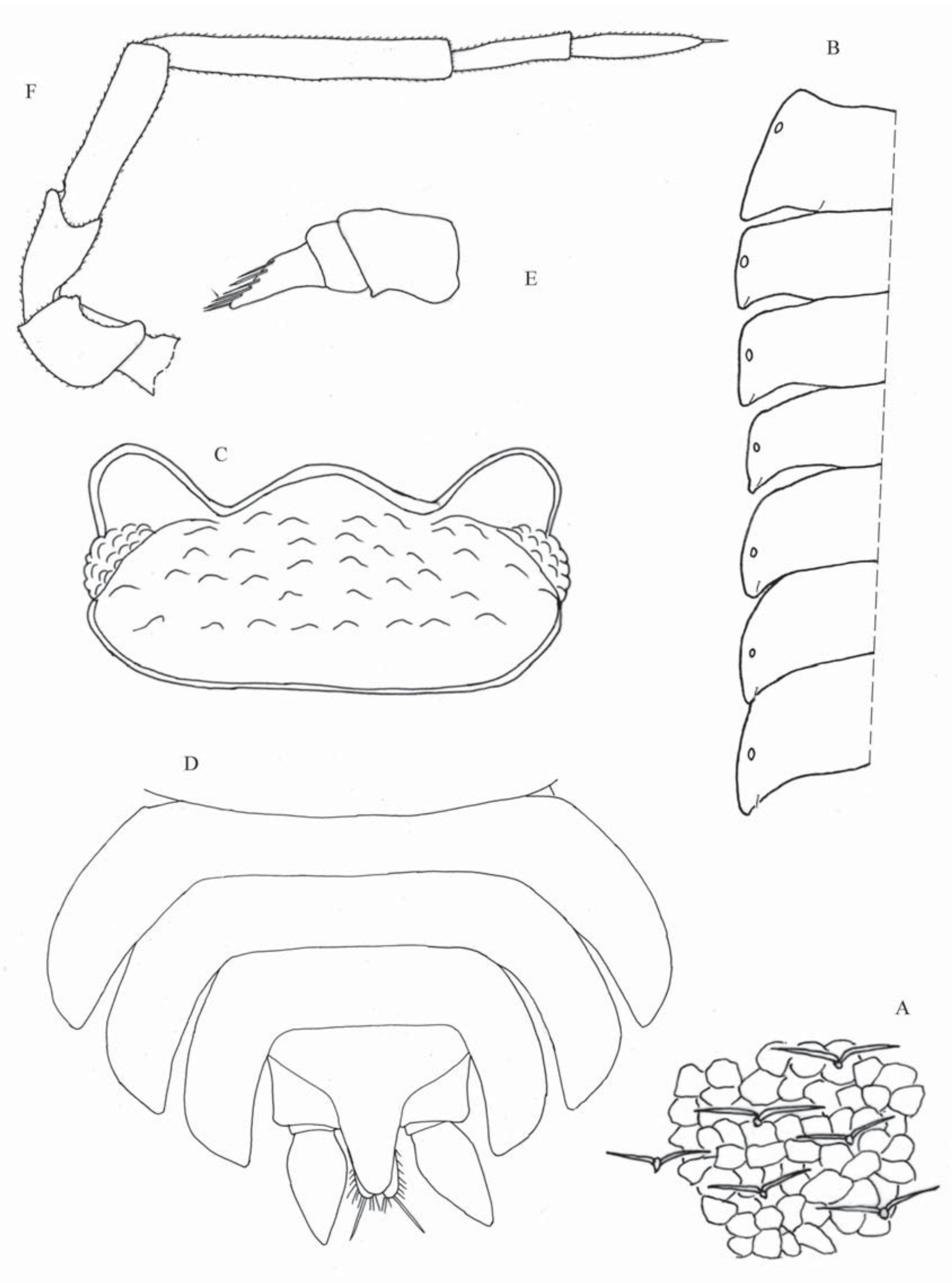


Fig. 2. *Trachelipus utrishensis* sp.n.: A — dorsal scale-setae; B — pereon epimera with noduli laterales and glandular pore fields; C — head; D — pleon, telson and uropods; E — antennula; F — antenna (female, paratype).

Рис. 2. *Trachelipus utrishensis* sp.n.: A — дорсальная сета; B — эпимеры переонита с noduli laterales и поровыми полями; C — голова; D — плеон, тельсон и уроподы; E — антеннула; F — антенна (самка, паратип).

REMARK. The species is assigned to the genus *Trachelipus* since it has 5 pairs of uncovered pleopodal lungs and flagellum of antennae consisting of two articles. Among species inhabiting NW Caucasus and NE Mediterranean, this species is the closest to *T. razzautii* due to a similar shape of exopod of the male pleopod 1. However, these two species differ in the following ways: (i) exopod of the male pleopod 1 has the outer



Fig. 3. *Trachelipus utrishensis* sp.n.: A — left mandible; B — right mandible; C — maxillula; D — maxilla; E — maxilliped (female, paratype).

Рис.3. *Trachelipus utrishensis* sp.n.: A — левая мандибула; B — правая мандибула; C — максиллула; D — максилла; E — максиллипед (самка, паратип).



Fig. 4. *Trachelipus utrishensis* sp.n.: A — pereopod 1; B — pereopod 6; C — pereopod 7 (male, holotype).
Рис. 4. *Trachelipus utrishensis* sp.n.: A — переопод 1; B — переопод 6; C — переопод 7 (самец, голотип).

margin almost not convex on its proximal part (corresponding to the lung); (ii) the ratio between first and second article of antennal flagellum in *T. utrishensis* is 1:1 while in *T. razzautii* it is 1:2; (iii) in general *T. razzautii* is much smaller than *T. utrishensis*, is paler and less flat. The maximal size of *T. razzautii* in type location is from 4.5 (♂♂) to 7 mm (♀♀) [Schmidt, 1997], and in the NW Caucasus is from 7.2 (♂♂) to 9.2 mm (♀♀) [Schmalfuss, Khisametdinova, 2015]. The maximal size of *T. utrishensis* is from 10 mm (♂♂) to 14 mm (♀♀).

DISTRIBUTION. The species has been found between Sukko River and Lake Abrau on the Abrau Peninsula so far. It occupies broadleaved forests (*Carpinus betulus*, *Tilia caucasica*, *Fagus orientalis*, *Quercus petraea*, *Fraxinus excelsior*) growing on the slopes of the Navagir Ridge not closer than 2–3 km away from the sea [see: Gongalsky, Kuznetsova, 2011].

ETYMOLOGY. The species name *utrishensis* originates from the type locality "Utrish", the peninsula which also gives name to the reserve.

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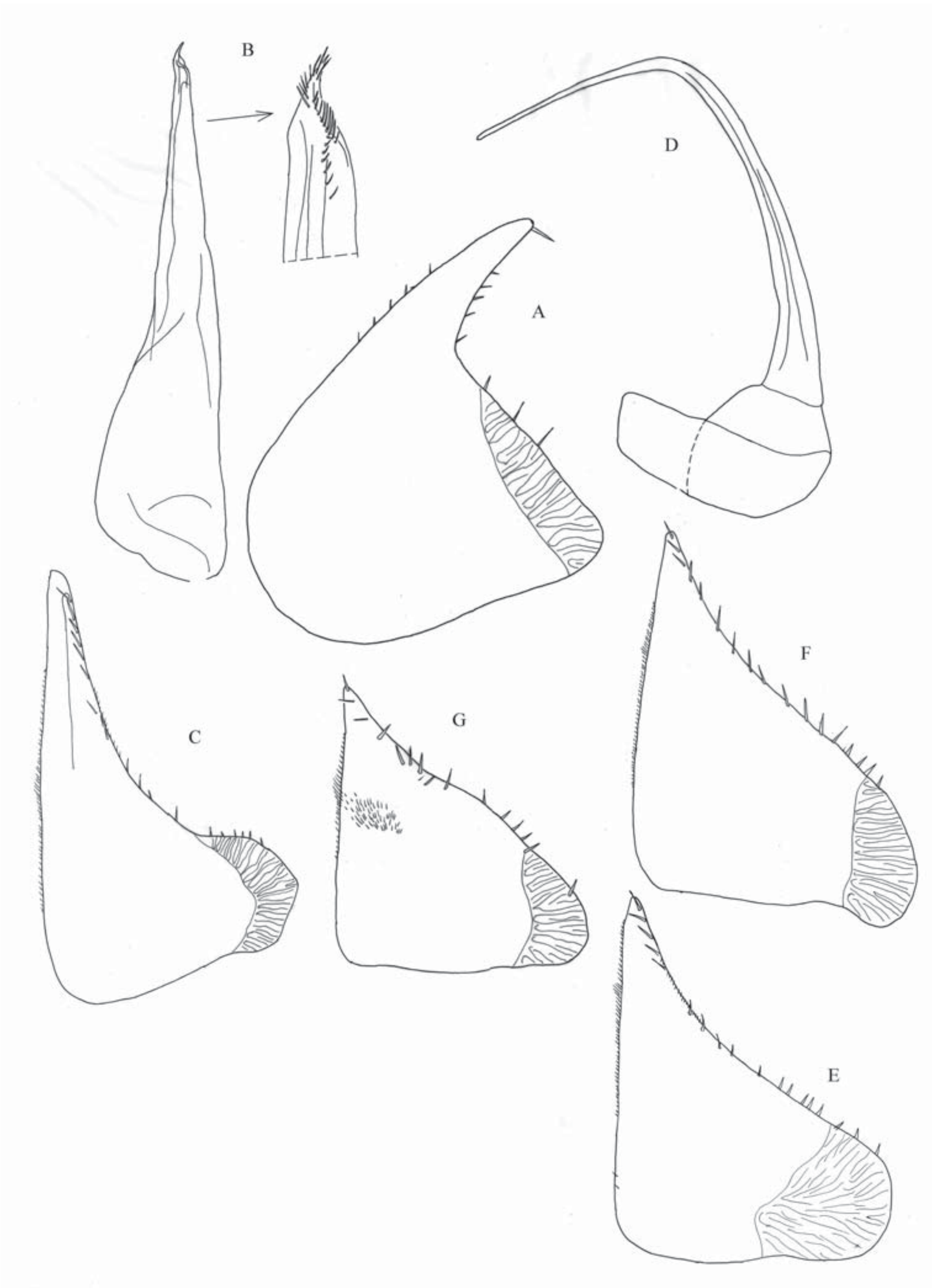


Fig. 5. *Trachelipus utrishensis* sp.n.: A — exopod of pleopod 1; B — endopod of pleopod 2; C — exopod of pleopod 2; D — endopod of pleopod 2; E — exopod of pleopod 3; F — exopod of pleopod 4; G — exopod of pleopod 5 (male, holotype).

Рис. 5. *Trachelipus utrishensis* sp.n.: A — экзопод плеопода 1; B — эндопод плеопода 2; C — экзопод плеопода 2; D — эндопод плеопода 2; E — экзопод плеопода 3; F — экзопод плеопода 4; G — экзопод плеопода 5 (самец, голотип).

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